

ABSTRACT

THESIS: Decreased *Lactobacillus* populations after erythromycin treatment hinders the induction of oral tolerance to fed ovalbumin

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DEGREE: Master of Science

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DATE: May, 2012

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Oral tolerance is an immunologic hyporesponsiveness to an orally administered antigen. Probiotics (beneficial intestinal bacteria), T regulatory cells (Tregs), and dendritic cells (DCs) are all essential for generating tolerance and suppressing immune responses toward harmless antigens. Antibiotics are commonly prescribed to fight infections and often necessary for maintaining health, but they can disrupt the normal intestinal microbial populations. There is increasing epidemiologic evidence that suggests that antibiotic usage correlates with the development of irritable bowel disorders, which often result due to a breakdown in immune tolerance. This study investigated the effect of the antibiotic erythromycin on oral tolerance induction to ovalbumin (OVA). The results demonstrate that antibiotic treatment prior to exposure to fed antigen prevents tolerance to that antigen, and this correlated with a reduction in intestinal *Lactobacillus* populations. Furthermore, antibiotic treatment resulted in a significant decrease in the tolerogenic CD11c⁺/CD11b⁺/CD8α⁻ MLN DCs independent of tolerizing treatment.